



**National  
Transportation  
Safety Board**

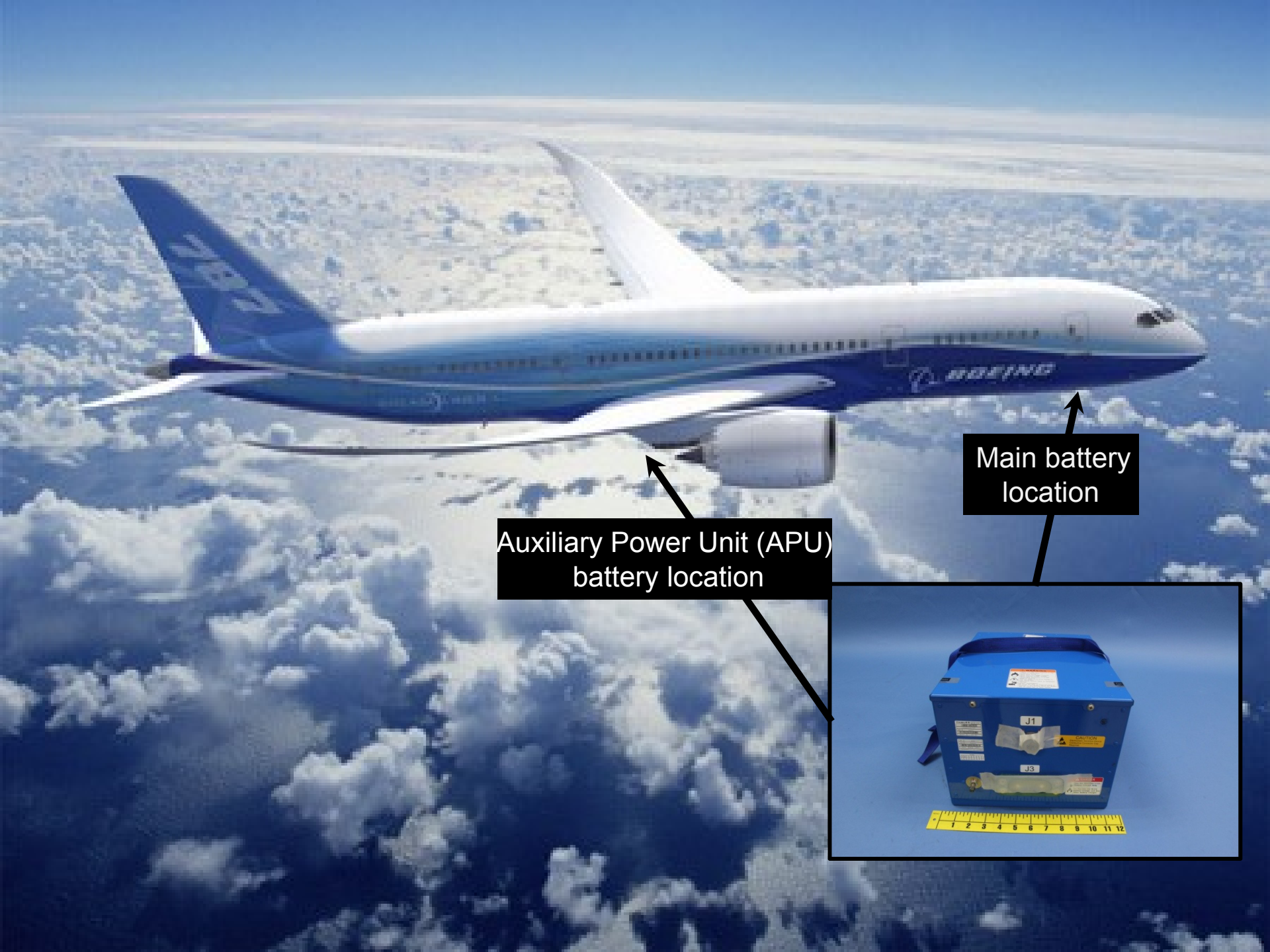
# Investigative Update of Battery Fire Japan Airlines B-787 - Jan 7, 2013

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*Chairman*

*February 7, 2013*





Auxiliary Power Unit (APU)  
battery location

Main battery  
location



# Previous Findings

- Fire
- Thermal runaway
- Short circuiting

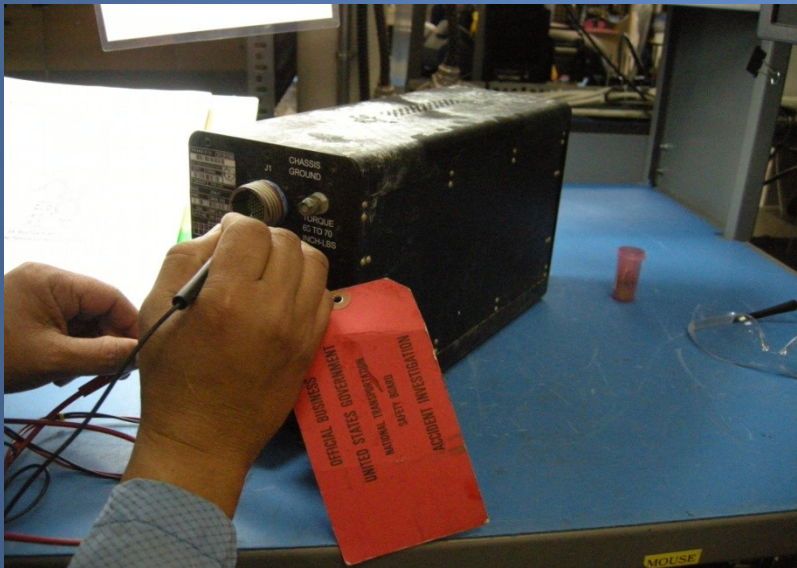
# Progress

- Determine the origin of the battery fire
- Determine the cause of the fire
- Review certification documentation and testing



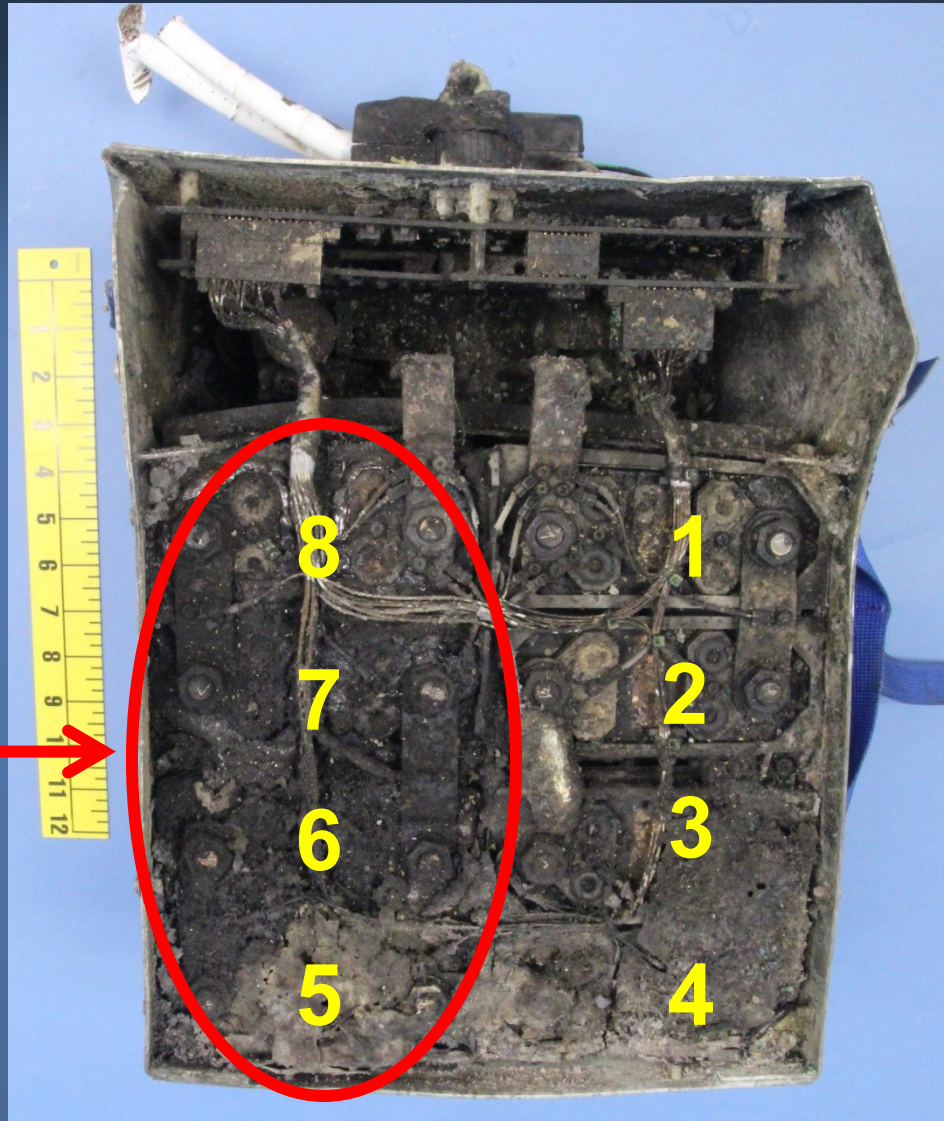
# Investigative Work

## Testing and Examinations



# Thermal Damage

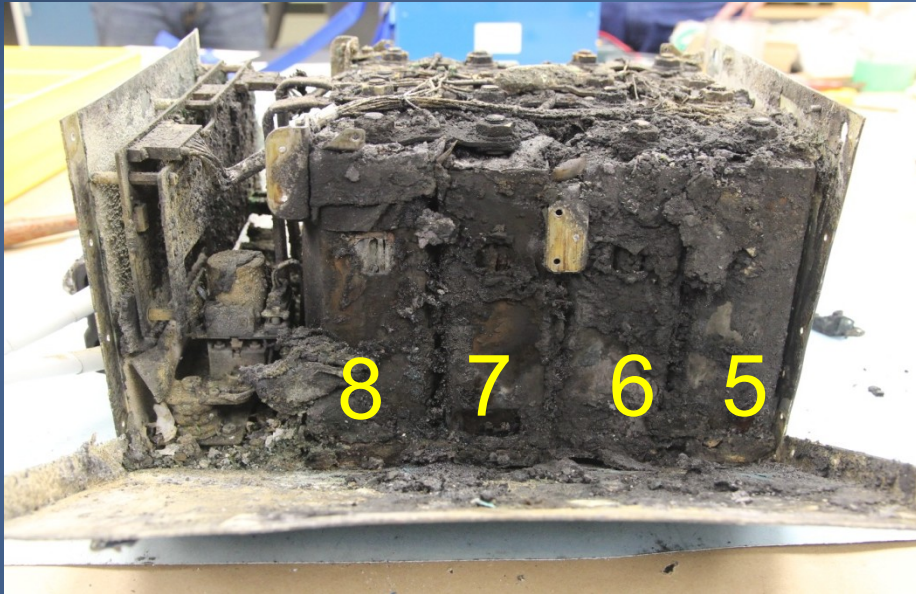
Area of  
most  
thermal  
damage





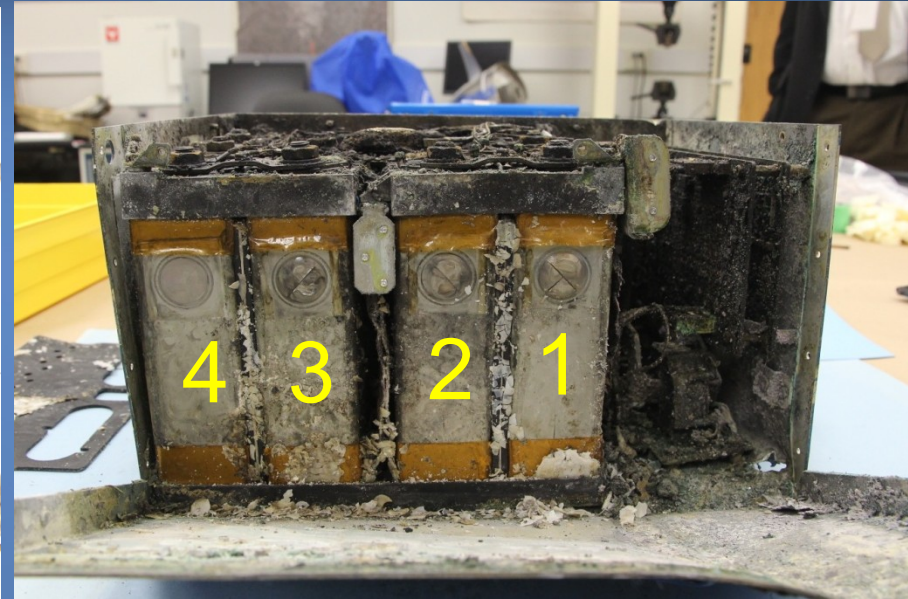
# Inside the Battery

Cells on the left side



Substantial thermal damage

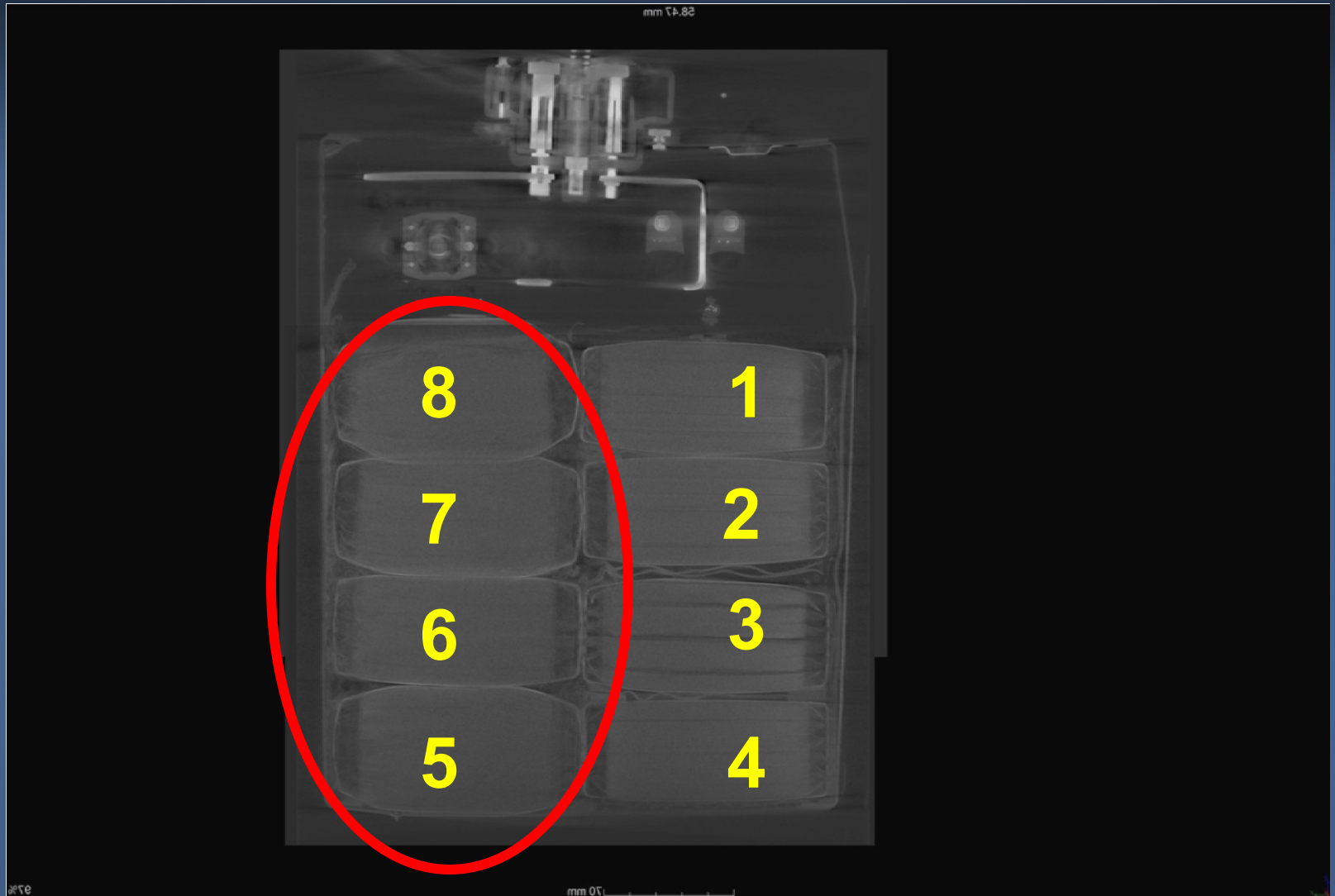
Cells on the right side



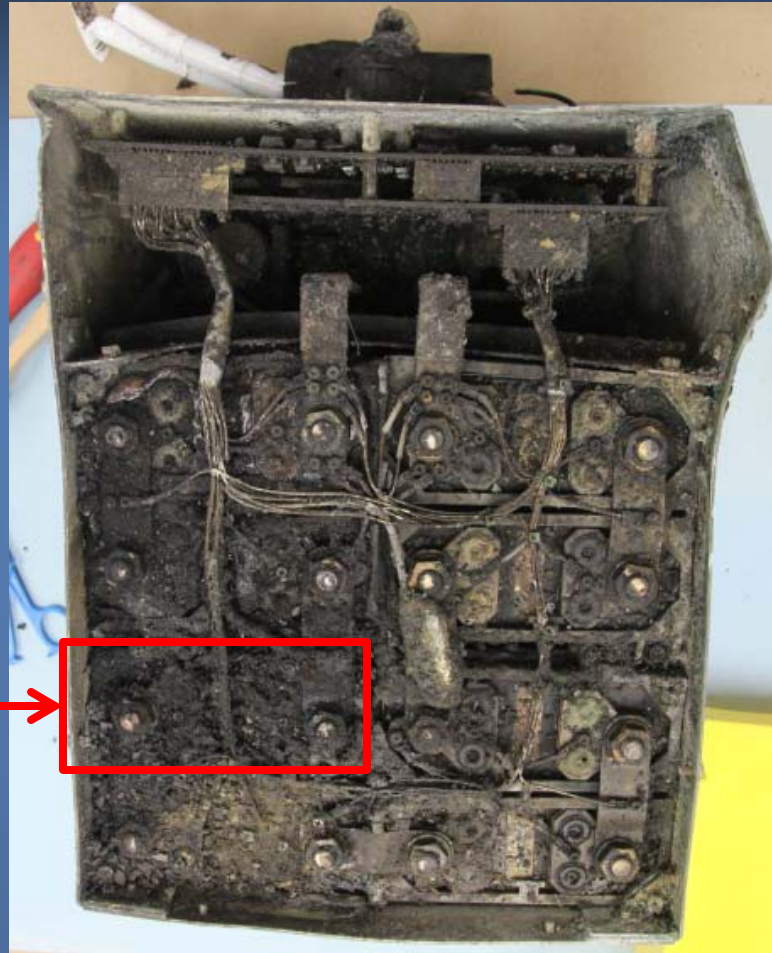
Moderate thermal damage



# Mechanical Damage



# Focus on Cell #6



Cell #6

Event battery from  
JAL airplane

# Damaged electrode in Cell #6



Hot Spot

*Yellow card is a laboratory marking used for identification purposes.*



# Ruled Out

- Mechanical impact damage

Damage from  
firefighting  
efforts



# Ruled Out

- External short circuit of cell or battery



Viewed From Outside  
(Post-clean)



# Still Being Evaluated

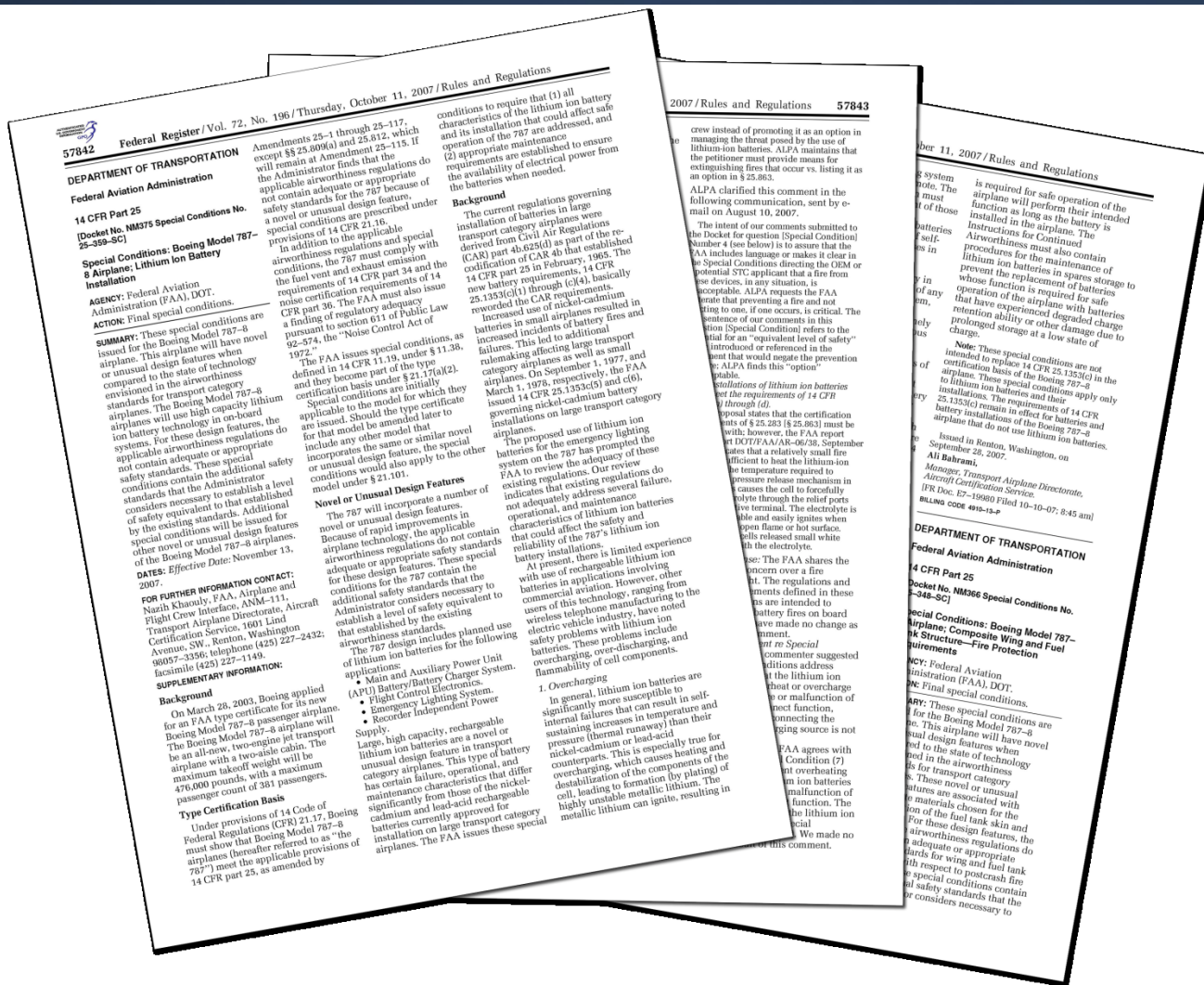
- Cell charging
- Potential manufacturing issues
- Battery design considerations



# Certification of the 787 Battery



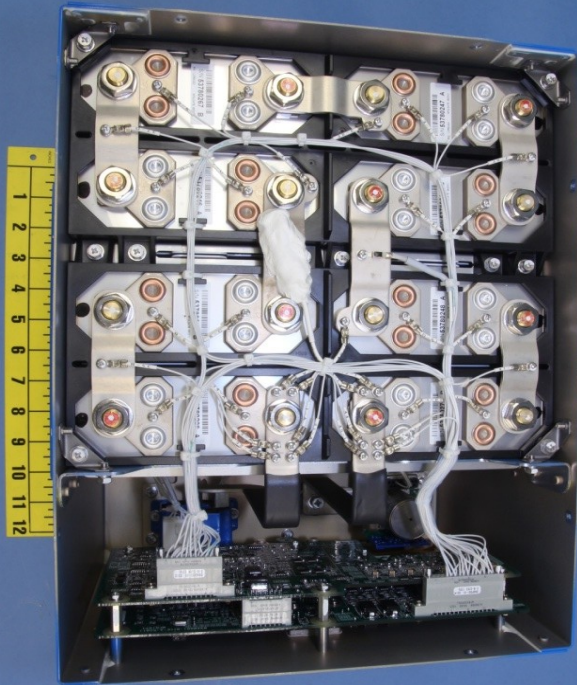
# Certification of the 787 Battery



A Special Conditions:  
Boeing Model 787-8  
Airplane;  
Lithium Ion Battery  
Installation October 11, 2007



# Certification of the 787 Battery



# Exemplar Battery



# JAL Event Battery



# Next Steps

- Examine validation methods for certification of battery
- Conduct tests on field replacement batteries
- Open our public docket and provide an interim factual report within 30 days



# National Transportation Safety Board